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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,138	01/22/2004	Robert Vincent	BOW1335-048	6409

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EXAMINER

FERNANDEZ, SUSAN EMILY

ART UNIT PAPER NUMBER

1651

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/763,138

Applicant(s)

VINCENT, ROBERT

Examiner

Susan E. Fernandez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 38-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-5, 7-17 and 38-41 is/are rejected.
- 7) ☒ Claim(s) 1-17, 38-41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date 7-13-05
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

The amendment filed April 18, 2005, has been received and entered. The text of those sections of Title 35, U.S. Code, not included in this action can be found in a prior office action.

The amendment to the claims filed on April 18, 2005, does not comply with the requirements of 37 CFR 1.121(c) because the claim listing does not contain a listing of all the claims ever presented for examination in this case, as well as their status. Amendments to the claims filed on or after July 30, 2003 must comply with 37 CFR 1.121(c) which states (emphasis added):

(c) *Claims*. Amendments to a claim must be made by rewriting the entire claim with all changes (e.g., additions and deletions) as indicated in this subsection, except when the claim is being canceled. ***Each amendment document that includes a change to an existing claim, cancellation of an existing claim or addition of a new claim, must include a complete listing of all claims ever presented, including the text of all pending and withdrawn claims, in the application.*** The claim listing, including the text of the claims, in the amendment document will serve to replace all prior versions of the claims, in the application. In the claim listing, the status of every claim must be indicated after its claim number by using one of the following identifiers in a parenthetical expression: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New), and (Not entered).

(1) *Claim listing*. All of the claims presented in a claim listing shall be presented in ascending numerical order. Consecutive claims having the same status of “canceled” or “not entered” may be aggregated into one statement (e.g., Claims 1–5 (canceled)). The claim listing shall commence on a separate sheet of the amendment document and the sheet(s) that contain the text of any part of the claims shall not contain any other part of the amendment.

(2) *When claim text with markings is required*. All claims being currently amended in an amendment paper shall be presented in the claim listing, indicate a status of “currently amended,” and be submitted with markings to indicate the changes that have been made relative to the immediate prior version of the claims. The text of any added subject matter must be shown by underlining the added text. The text of any deleted matter must be shown by strike-through except that double brackets placed before and after the deleted characters may be used to show deletion of five or fewer consecutive characters. The text of any deleted subject matter must be shown by being placed within double brackets if strike-through cannot be easily perceived. Only claims having the status of “currently amended,” or “withdrawn” if also being amended, shall include markings. If a withdrawn claim is currently amended, its status in the claim listing may be identified as “withdrawn—currently amended.”

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(3) *When claim text in clean version is required.* The text of all pending claims not being currently amended shall be presented in the claim listing in clean version, *i.e.*, without any markings in the presentation of text. The presentation of a clean version of any claim having the status of “original,” “withdrawn” or “previously presented” will constitute an assertion that it has not been changed relative to the immediate prior version, except to omit markings that may have been present in the immediate prior version of the claims of the status of “withdrawn” or “previously presented.” Any claim added by amendment must be indicated with the status of “new” and presented in clean version, *i.e.*, without any underlining.

(4) *When claim text shall not be presented; canceling a claim.*

(i) No claim text shall be presented for any claim in the claim listing with the status of “canceled” or “not entered.”

(ii) Cancellation of a claim shall be effected by an instruction to cancel a particular claim number. Identifying the status of a claim in the claim listing as “canceled” will constitute an instruction to cancel the claim.

(5) *Reinstatement of previously canceled claim.* A claim which was previously canceled may be reinstated only by adding the claim as a “new” claim with a new claim number.

As noted above, the amendment under consideration herein fails to comply with 37 CFR 1.121 because the claim listing does not contain a listing of all the claims ever presented for examination in this case, as well as their status. Thus, the amendment could be considered non-responsive. However, in the interest of compact prosecution the amendment at issue will not be considered non-responsive. However, any future responses failing to comply with 37 CFR 1.121 will be held non-responsive, and will not be considered.

Claims 1-17 and new claims 18-21 are pending and are examined on the merits. New claims 18-21 have been renumbered 38-41, respectively.

Claim Objections

Claims 1 and 2 are objected to because of the following informalities: “wavelength” is incorrectly spelled as “wavength” in lines 6 and 13 of claim 1, and in line 2 of claim 2.

Appropriate correction is required.

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 18-21 have been renumbered 38-41, respectively.

The claims are objected to because the lines are crowded too closely together, making reading difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3-5, 8-9, and 11-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, the specification does not discuss what algorithms would be considered "equivalents" of the algorithm $X \approx K_1 - K_2 \times (R31) + K_3 \times (R41) - K_4 \times (R43) - K_5 \times (R53) + K_6 \times (R73) - K_7 \times (R74)$. The skilled artisan cannot recognize any and all algorithms which are

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equivalents of the above equation. Thus, claims 3-5, 8-9, and 11-15 are rejected under 35 U.S.C. 112, first paragraph.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-5 and 7-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 12 is rendered indefinite by the term “equivalents”, since the metes and bounds of the term are unclear. It is not clear what algorithms would be considered “equivalents” of $X \approx K_1 - K_2 \times (R31) + K_3 \times (R41) - K_4 \times (R43) - K_5 \times (R53) + K_6 \times (R73) - K_7 \times (R74)$. Thus, claims 3-5, 8-9, and 11-15 are rejected under 35 U.S.C. 112, second paragraph.

Claims 7-9 are rendered indefinite by the phrase “said phycocyanin”. The phrase lacks antecedent basis, as “phycocyanin” is not recited in the claims 7-9 or their parent claims. Thus, claims 7-9 are rejected under 35 U.S.C. 112, second paragraph.

Claims 8 and 9 are indefinite because they each comprise the phrase, “the actual measured amount”. The phrase can be confused with the “determined amount”, as they are both amounts which are measured. Thus, claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph.

Claims 10 and 11 are indefinite because they each comprise the phrase, “the approximate amount”. It is not clear whether “the approximate amount” recited in claim 10 is the amount determined in step (b) of parent claim 1. With respect to claim 11, it is not clear whether the

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phrase refers to the “determined amount” recited in parent claim 5. Thus, claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph.

Claim 12 is rendered indefinite by the phrase “said amount of phycocyanin” in line 12. The term lacks antecedent basis, as the claim does not previously recite any amount of phycocyanin. Thus, claims 12-15 are rejected under 35 U.S.C. 112, second paragraph.

Claim 16 is indefinite because the phrases “said measurement device” and “said remote site” lack antecedent basis. Thus, claims 16-17 are rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 38 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Gitelson et al. (J. Phycol. 1995, 31: 828-834).

Gitelson et al. teaches an equation for the calculation of biomass (equation 1, page 832, second column), which includes the sum of the reflectance above the base line (SUM) through 0.670 and 0.950 μm , where reflectance is a measurement of reflected light from water containing the biomass. Moreover, this sum would include the reflectances for at least two of wavelength ranges of from 0.670 and 0.950 μm , and would include the reflectances for three wavelengths. This biomass would have comprised of biomass containing phycocyanin. The equation is useful

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for the determination of the biomass of *Spirulina*, which is phycocyanin-pigmented algae, thus the equation is appropriate for any specific pigmented microorganism. A holding of anticipation is clearly required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitelson et al.

As discussed above, Gitelson et al. anticipates claims 38 and 40.

Gitelson et al. does not expressly disclose applying an algorithm comprising a quantitative relationship between the sum of ratios of reflectances and the amount of phycocyanin-pigmented algae or bacteria in water.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the reflectance data obtained in the Gitelson study to derive an algorithm relating the sum of ratios of reflectances to the amount of phycocyanin-pigmented algae or bacteria in water.

One of ordinary skill in the art would have been motivated to have applied other fitting algorithms besides linear regression which are well known in the field of mathematical modeling

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in order to arrive at more accurate methods of assessing population dynamics. A holding of obviousness is clearly required.

No claims are allowed. However, the following amendments would place claims 1-17 in condition for allowance: **(1)** Spelling of wavelength in claim 1 (lines 6 and 13) and claim 2 (line 2); **(2)** Deletion of "any algorithm selected from the group consisting of" and "and equivalents" in claim 3 (lines 1, 2, and 3) and claim 12 (lines 13 and 15); **(3)** Replacement of "said phycocyanin" with "said phycocyanin-pigmented algae or bacteria" in claims 7-9 (line 3 of each); **(4)** Deletion of "measured" in line 3 of each of claims 8 and 9; **(5)** Replacement of "the approximate amount" with "the determined amount" in claims 10 and 11 (line 2 of each); **(6)** Replacement of "phycocyanin" in line 12 with "phycocyanin-pigmented algae or bacteria" in claim 12; **(7)** Replacement of "said" in line 10 with "the" in claim 16; **(8)** Replacement of "said remote site" in line 14 with "the remote site" in claim 16.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan E. Fernandez whose telephone number is (571) 272-3444. The examiner can normally be reached on Mon-Fri 8:30 am - 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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